WorldDSL™ HDSL

Economical, Reliable, and Manageable E1 and Serial Data Deployment

Line and Universal Terminating Units

Element Doubler Unit

ADC's WorldDSL™ HDSL Solutions are designed for the copper cable-based E1 (G.703) and Serial data (V.35, V.36,RS-530, and X.21) access needs of Global markets and are ideal for both telco and enterprise networks. WorldDSL HDSL Line and Universal Terminating Units can be used in a managed central office (CO) or enterprise data-center based type chassis or in single slot enclosures. WorldDSL HDSL Element Doubler Units are used outdoors between the central office and the customer to extend the range and reach of HDSL when needed.

WorldDSL HDSL is part of a fully manageable system. Using a VT100 compatible terminal or a PC, the units can be managed via their local craft ports. When used in a WorldDSL Element Managed Shelf (EMS) and an Element Management Unit (EMU), the entire system can be managed locally or remotely through a dial-up modem or Ethernet network.

The HDSL line cards come in span powering Line Terminating Unit (LTU) and Universal Terminating Unit (UTU) versions. The LTU central office unit is locally powered and can span power a remote UTU version. The UTU card can be used universally as a locally powered CO/LTU or as a local or span powered remote/Network Terminating Unit (NTU). LTUs and UTUs can be mounted in a 16-slot EMS or a single slot Element Remote Enclosure (ERE).

The WorldDSL HDSL Element Doubler Unit (EDU) can be used to greatly increase the service area range. The EDU is line powered by a WorldDSL LTU. Up to two EDUs can be installed in a circuit, each of which will extend the reach of the circuit. For example, if, based on the current circuit noise and wire gauge, the reach is 3.2 Km, adding one EDU can extend reach to 6.9 Km and a second can extend reach to 7.5 Km. The EDU is suitable for outdoor use and is mounted in one of ADC's weatherproof enclosures such as the single HRE-602 (holds one EDU) or Radiator (holds 6 to 8 EDUs). The EDU features a front panel LED for easy verification of operation during installation and troubleshooting that is externally visible when used with the HRE-602 enclosure. ADC's doubler enclosures also feature integrated gas tubes for lightning and power cross protection.

SPEC SHEET

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Features

- Fiber optic quality (BER 10^{-10})
- LTUs can provide line powering for up to two doublers for very long reach loops
- LTUs can provide wetting current to reduce corrosion of connections
- Point-to-multipoint configurations where a single central office card can operate two 1 Mbps remote NTUs each via a single twisted pair to reduce system costs
- User software selectable dataport interface
- Single pair mode where the unit uses only one pair at a maximum rate of 1Mbps
- Timeslot priority mode where, if one of the two HDSL pairs fails, the FAS, signaling and first 15 voice channels are switched to the operating pair

Single Span Reach

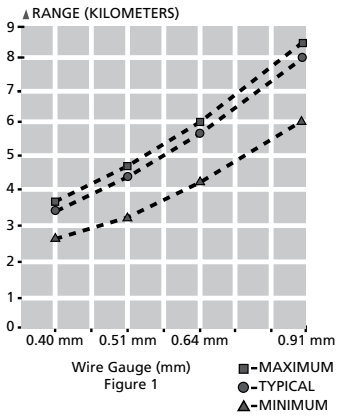


Figure 1

2 Span Single Doubler Reach

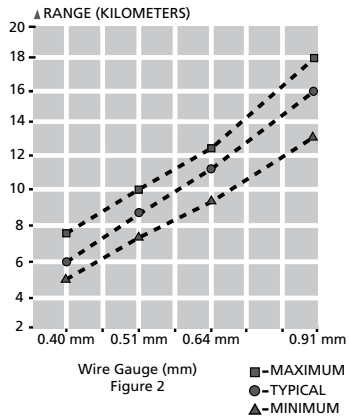


Figure 2

3 Span Two Doublers Reach

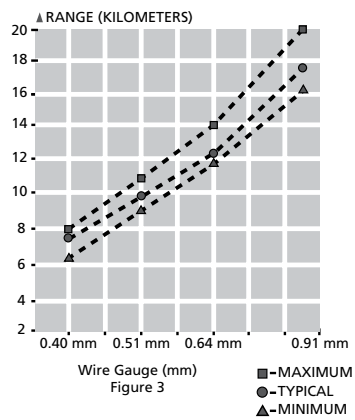
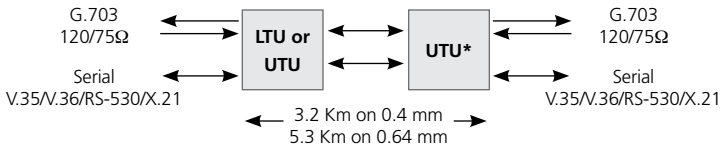
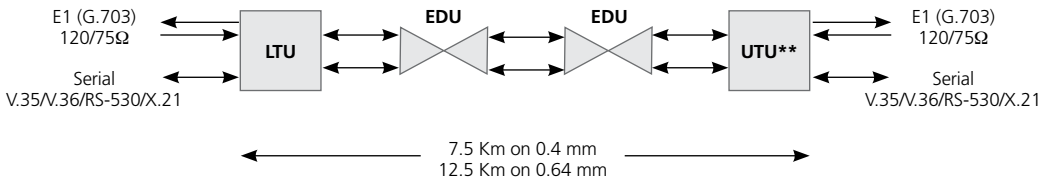


Figure 3



Typical Single Span Applications



Typical 3-Span Extended Reach with doublers line powered and remote UTU locally powered

***** Can be line powered from LTU or AC or DC local powered

****** AC or DC local power required

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Specifications

HDSL Interface	
Line Code:	2B1Q
Line Rate:	1168 kbps on each pair
Output:	13.5 dBm ± 0.5 dB
Maximum Provisioning Loss:	35 dB at 292 kHz
Range:	See Figures 1, 2 and 3
HDSL Connector:	See specific enclosure for external DSL interface connection type
Secondary Protection:	Provided on LTU, UTU, and EDU
LTU/UTU Protection Compliance:	ITU-T K.20 and K.21 compliant when used in ADC Chassis and Enclosures
EDU Protection Compliance:	ITU-T K.17
EDU Primary Protection:	Integrated gas discharge tubes when used in EDU enclosures
EDU Protection Compliance:	ITU-T K.17 when used in ADC enclosures
Other Compliances:	ETSI TS101135 and ITU-T G.991.1
E1 Interface	
Line Code:	HDB3
Data Rate:	2048 kbps
Operation:	Full or fractional
Blocking:	Per 64 kbps channel
Idle Code Insertion:	User selectable word
Impedance:	120 Ω balanced or 75 Ω unbalanced
Framing:	Structured with or without CRC-4 or unstructured
Connectors:	Both D15F (balanced) and BNC (unbalanced)
Timing:	G.703 or external
Compliance:	ITU-T G.703, G.704, G.706, G.821, G.823, CTR12
Data Interface	
User software selectable as:	V.35, V.36, RS-530, X.21
Connector:	D25F (adapters available)
Timing:	Internal, external, Nx64k, HDSL
Compliance:	Net 2
Performance Monitoring	
HDSL:	Noise margin, pulse attenuation, ES, UAS
E1:	ITU-T G.821
Alarms:	Form C relay contacts
HDSL Loopbacks:	LTU or UTU local or remote towards Network or Customer EDU towards Network
E1 and Serial Data Loopbacks:	Local or remote towards Network or Customer
Test Pattern:	PRBS generator and BER meter
Power	
Input Power:	-36 to -72VDC for LTU and UTU when locally powered 75VDC to 120VDC Tip to Ring for UTU or EDU when span powered from LTU
Power Consumption:	5W for line or locally powered UTU 5W for LTU with line powering off 15W for LTU with line powering on 2.5W for line powered EDU
Physical	
LTU and UTU Dimensions (HxWxD):	6.89" x 0.925" x 8.45" (175 mm x 24 mm x 215 mm)
Weight	
LTU:	0.81 lbs. (0.37 Kg)
UTU:	0.61 lbs. (0.28 Kg)
EDU Dimensions (HxWxD):	2.6" x 1.46" x 6.5" (66 mm x 37 mm x 165 mm)
EDU Weight:	1.8 lbs. (0.82 kg)

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LTU Chassis and Enclosures:	EMS-830 L2 or EMS-832 L2 Central Office 16 slot shelf ERE-811 L5 single slot desktop enclosure
EDU Outdoor Enclosures:	HRE-602 L1 above ground, hold one EDU RAD-AG30-8 above ground, vented, holds 4-6 EDUs RAD-BA30-8 below ground, pressurized, holds 4-6 EDUs RAD-AG30-16 above ground, vented, holds 8 EDUs RAD-BA30-16 below ground, pressurized, holds 8 EDUs Note: All Have Integrated Gas Discharge Tube protection
Environmental	
Operating Temperature:	-5° C to +50° C (LTU and UTU), -40° C to +65° C (EDU)
Storage Temperature:	-40° C to +85° C
Humidity:	Up to 95% RH non-condensing
Regulatory	
	CE marked
Safety:	EN60950
Emissions and Immunity:	EN 300386-2

Ordering Information

Description	Catalog Number
Line Terminating Unit, locally with span powering, E1+serial (G.703+V.35, V.36, RS-530, X.21)	LTU-804 L1C
Universal Terminating Unit, locally or span powered by LTU, E1+serial (G.703+V.35, V.36, RS-530, X.21)	UTU-804 L1C
Element Doubler/Regenerator Unit, span powered by LTU, double-wide 239 mechanics	EDU-840 L3

SPEC SHEET

Website: www.adc.com

From North America, Call Toll Free: 1-800-366-3891 • Outside of North America: +1-952-938-8080

Fax: +1-952-917-3237 • For a listing of ADC's global sales office locations, please refer to our website.

ADC Telecommunications, Inc., P.O. Box 1101, Minneapolis, Minnesota USA 55440-1101

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